

“IMPERIAL” PISTON DRILLS

Ingersoll-Rand Company

11 BROADWAY, NEW YORK

Form No. 8005

February, 1911



Drilling on the Deck of a Ship

THE Ingersoll-Rand “Imperial” Pneumatic Piston Drill is a three-cylinder, balanced, reciprocating type embodying features of design which have won it an enviable position among high-class, high-duty pneumatic tools. In considering the merits of any labor-saving and cost-reducing machine, the conditions under which it is to do its work must be understood and their effect upon the performance of the tool must be taken into account. In a pneumatic drill, for instance, low power consumption alone is not a proper standard, or light weight, or a large capacity, or convenience, or wearing power.

The best pneumatic drill is the one which best combines all of these desirable elements, in a sturdy, “all-around” tool which does good work on a fair power consumption and keeps up its good

work indefinitely because of its high-class design, materials and construction.

Such a tool is the "Imperial" Piston Drill, designed not for record-breaking performance, but for steady, month-after-month service with power and up-keep costs moderate and reasonably in proportion to the work accomplished. It is adapted, in its various sizes, for all the ordinary work of the pneumatic drill — drilling, reaming, tapping and flue rolling. The features of convenience and ready control have been especially well provided for.

The "Imperial" motor is of the three-cylinder reciprocating type, the cylinders being equally spaced radially around a common center. The cylinders with their pistons revolve around a strong main bearing which serves as a valve. This one central valve controls the admission and exhaust for all three cylinders. The valve seat is a tapered bronze bushing in the center between the cylinders, and any wear may be taken up by driving this bushing further in. The design is such that the live air pressure on each active piston automatically presses the valve against its seat throughout the stroke. This means that there is no chance for leakage of live air due to wear of valve or seat; for wear, as it may occur, is automatically taken up by the pressure on the piston.

Especial care has been taken to make the "Imperial" a serviceable, permanently economical drill. To this end, all bearings are made large and the most important ones are bushed with removable anti-friction bushings. Light weight is provided without sacrifice of strength by making most of the parts of drop-forged steel of high quality. The revolving parts are per-



"Imperial" Wood Boring Machine at Work

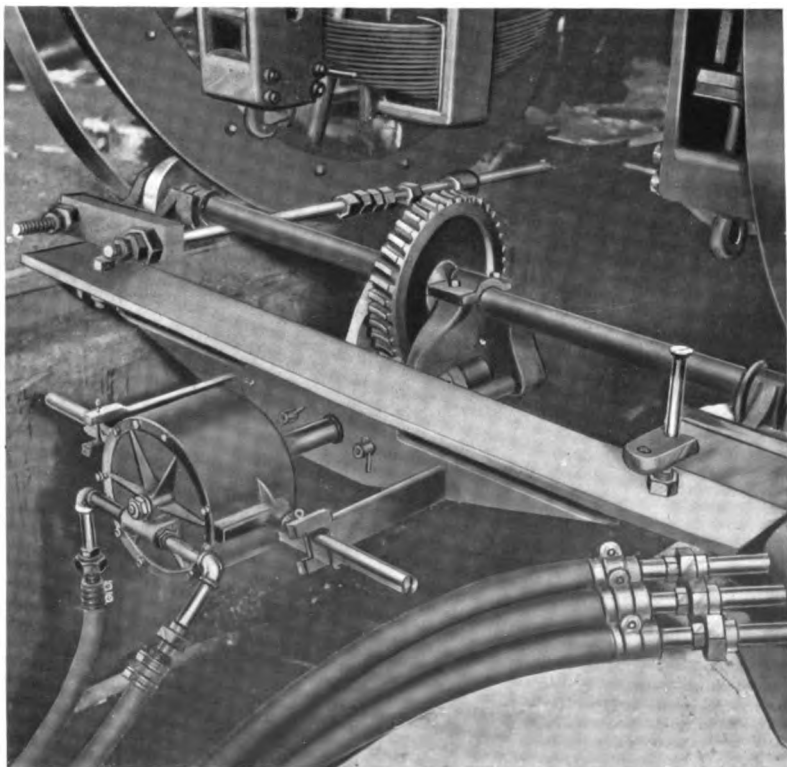
"IMPERIAL" PISTON DRILLS

fectly balanced and, rotating about a common center, there is no vibration at any speed.

All parts are amply strong for the duty upon them, and are well secured in position to guard against derangement and break-down. Probably in no tool is the need for proper lubrication greater than in a high-speed pneumatic drill. In the "Imperial" every precaution has been taken to provide for the free and ample oiling of all bearings.

There is no drill on the market offering a higher grade of design, materials and workmanship than the "Imperial." With reasonable care in handling it and in proper cleaning and oiling, the "Imperial" will show a performance which will satisfy the most exacting demands.

The table on page 4 gives the dimensions, capacity, and other information on the standard "Imperial" line. The pages following illustrate the various sizes in their relative proportions.



"Imperial" No. 4 Drill Modified for Locomotive Valve setting. Twenty-six of these Machines are in use at the West Albany Shops of the New York Central R.R. Co.

"IMPERIAL" PNEUMATIC PISTON DRILLS

STYLE	SIZE	Weight, pounds	Length, inches	Length of feed, inches	Diameter from side to center of spindle, inches	Morse Taper Socket, inches	Square Tap Socket, inches	Size Twist Drill will drive, inches	Size of wood bit will drive, inches	Reaming, inches	Tapping, inches	Flue Rolling, inches	R. P. M. at 80 pounds	Cubic feet of free air at 80 pounds	Hose Connection, inches																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
-------	------	----------------	----------------	------------------------	---	----------------------------	---------------------------	-------------------------------------	-------------------------------------	-----------------	-----------------	----------------------	-----------------------	-------------------------------------	-------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

"IMPERIAL" PISTON DRILLS



"Imperial" Drill on Ship Repair Work

NON-REVERSIBLE DRILLS



No. 2 "IMPERIAL" PISTON DRILL

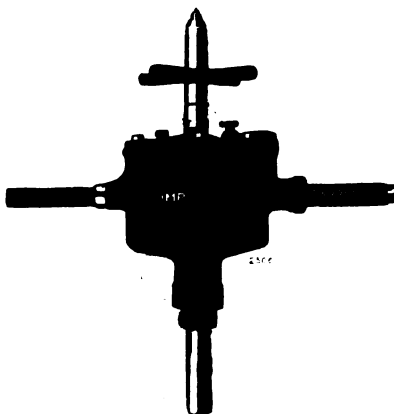
**For Drilling, Reaming and Tapping. Fitted with No. 3 Morse Taper Socket
and $\frac{1}{4}$ -inch Square Tap Socket**



No. 3 "IMPERIAL" PISTON DRILL

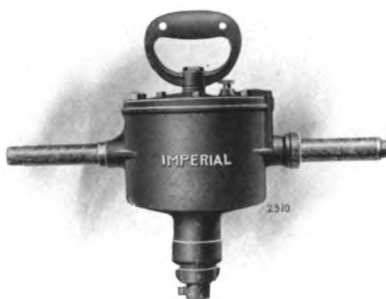
**For Heavy Metal Drilling, Reaming and Tapping. Fitted with No. 4 Morse Taper Socket
and $\frac{1}{4}$ -inch Square Tap Socket**

REVERSIBLE DRILLS



No. 1 "IMPERIAL" PISTON DRILL

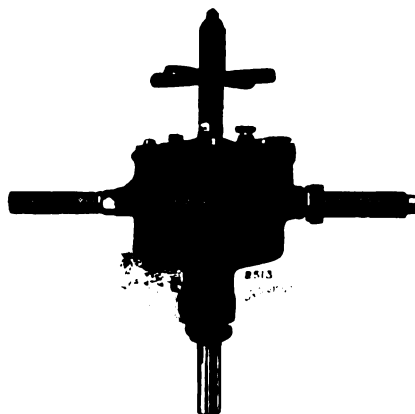
For Drilling, Reaming and Tapping. Fitted with No. 3 Morse Taper Socket



No. 11 "IMPERIAL" PISTON DRILL

For Wood boring. Fitted with Spade Handle and Chuck for $2\frac{1}{4}$ -inch Wood Boring Auger

REVERSIBLE DRILLS



No. 21 "IMPERIAL" PISTON DRILL

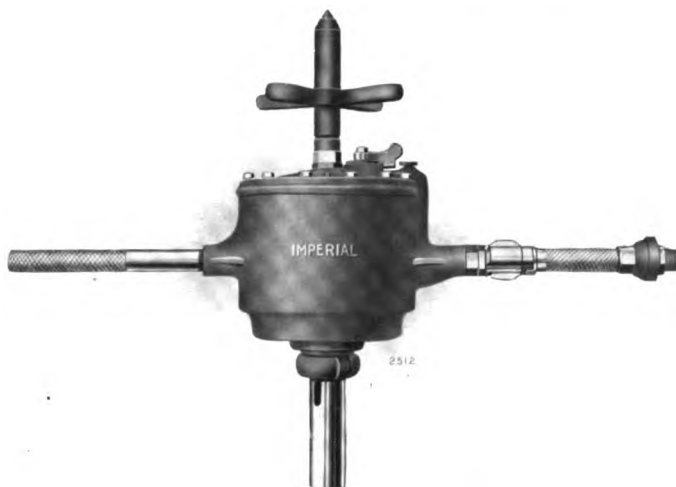
For Drilling, Reaming and Tapping. Fitted with No. 2 Morse Taper Socket



No. 12 "IMPERIAL" PISTON DRILL

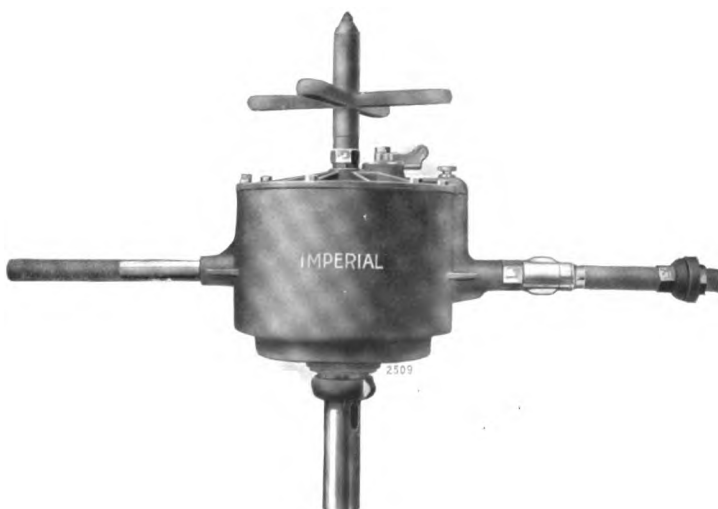
**For Drilling, Reaming, Tapping and Flue Rolling. Fitted with No. 3 Morse Taper Socket
and $\frac{1}{4}$ -inch Square Tap Socket**

REVERSIBLE DRILLS



No. 13 "IMPERIAL" PISTON DRILL

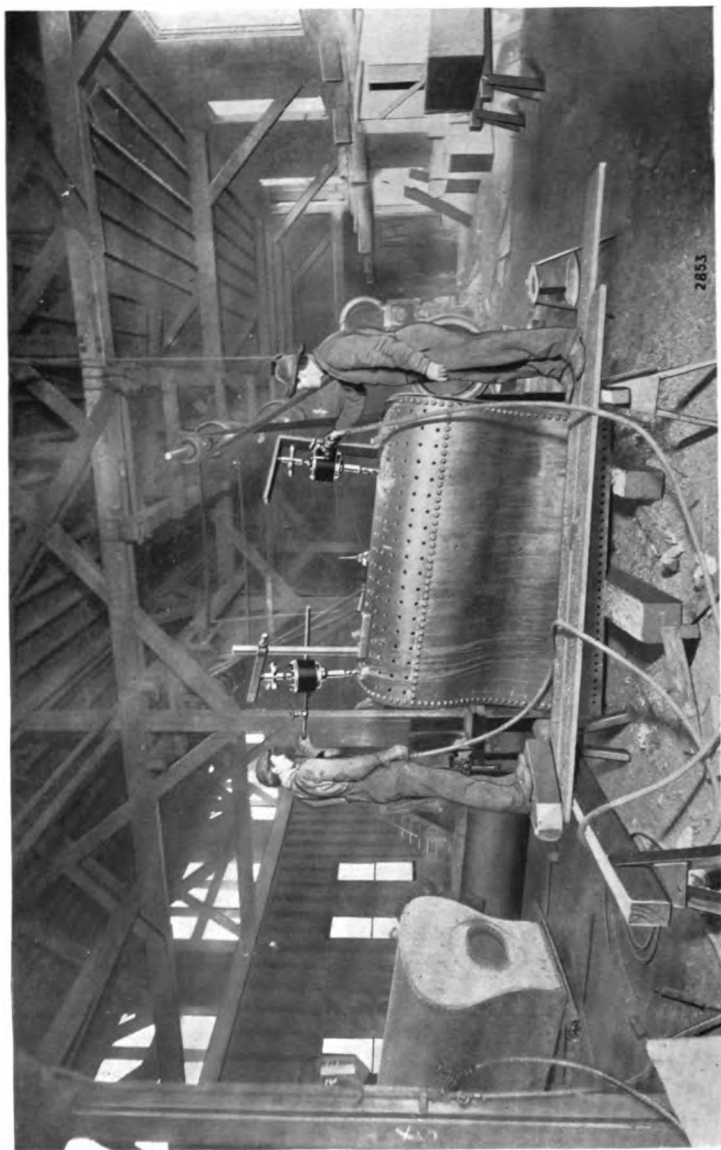
**For Heavy Drilling, Reaming, Tapping and Flue Rolling. Fitted with No. 4
Morse Taper Socket and $\frac{1}{16}$ -inch Square Tap Socket**



No. 4 "IMPERIAL" PISTON DRILL

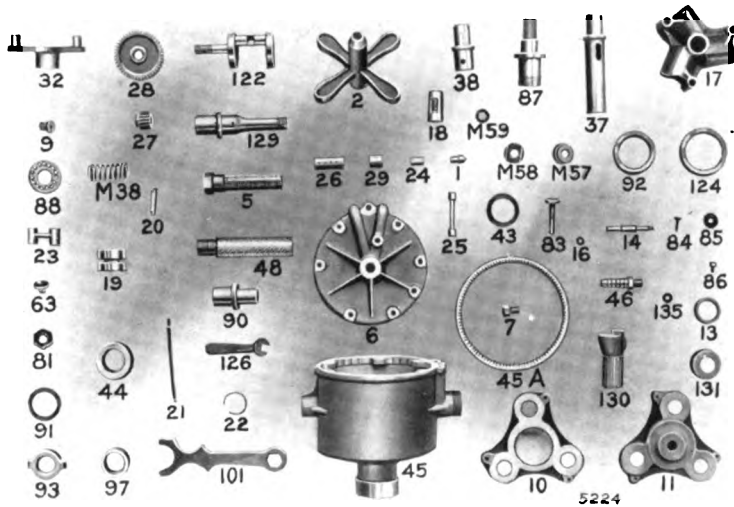
**For Extra Heavy Drilling, Reaming, Tapping and Flue Rolling. Fitted with No. 4
Morse Taper Socket and $\frac{1}{16}$ -inch Square Tap Socket**

"IMPERIAL" PISTON DRILLS



"Imperial" Piston Drills at work on Locomotive Fire Box, Seaboard Air Line Shops.
This Company uses more than Twenty-five "Imperial" Drills

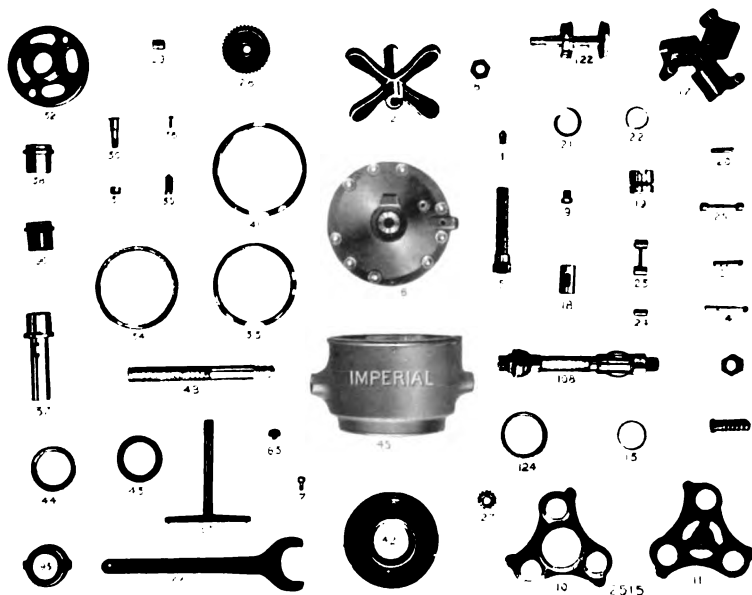
"IMPERIAL" PISTON DRILLS



Duplicate Part List of No. 1 "Imperial" Drill

1	Feed Nut Center	45	Case
2	Feed Nut	45A	Internal Gear Rack
5	Feed Screw	46	Hose Nipple
6	Top Cover	48	Plain Handle
7	Top Cover Screw	M57	Throttle Handle Base
9	Crank Disc Screw	M58	Throttle Handle Cap
10	Guide Frame	M59	Throttle Handle Strainer
11	Drive Frame	63	Oil Hole Plug
13	Frame Bushing	81	Crank Nut
14	Frame Bolt	83	Pinion Screw
16	Frame Bolt Nut	84	Gear Stud Screw
17	Cylinder	85	Gear Stud Washer
18	Cylinder Bushing	86	Gearhead Screw
19	Piston	87	Spindle
20	Piston Pin	88	Spindle Bearing
21	Piston Packing	90	Square Taper Socket
22	Piston Spring	91	Spindle Packing Seat
23	Connecting Rod	92	Packing Nut Lock
24	Rod Bushing	93	Spindle Nut
25	Roller	97	Case Bushing
26	Roller Bushing	101	Combination Spanner
27	Pinion	122	Crank
28	Intermediate Gear	124	Frame Ball Cup
29	Gear Bushing	126	Cap Bolt Wrench
32	Gearhead	129	Throttle Handle
37	Morse Taper Socket	130	Throttle Handle Valve
38	Reamer Chuck	131	Throttle Handle Nut
M38	Throttle Handle Spring	135	Roller Stem Washer,
43	Spindle Packing		Balls, $\frac{1}{16}$ inch diameter
44	Packing Nut		

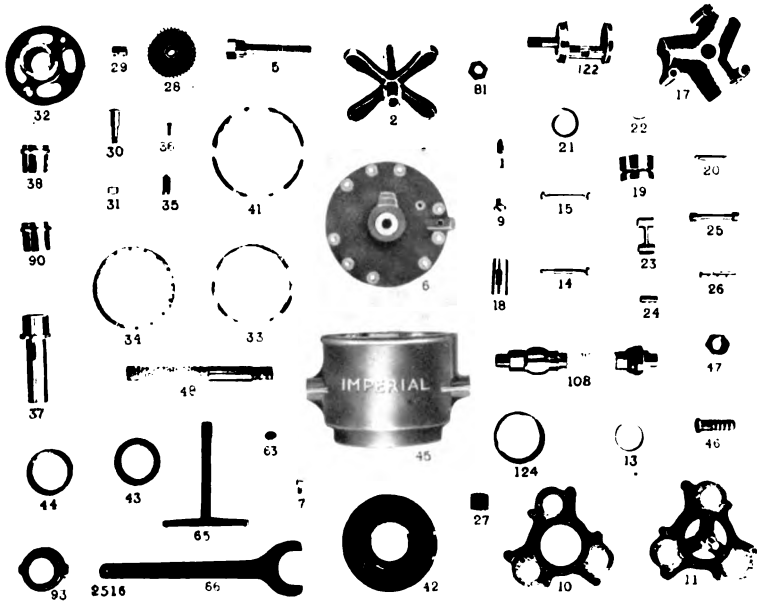
"IMPERIAL" PISTON DRILLS



Duplicate Parts of No. 2 "Imperial" Drill

- | | |
|---|--------------------------------------|
| 1 Feed Nut Center | 29 Gear Bushing |
| 2 Feed Nut | 30 Gear Stud |
| 5 Feed Screw | 31 Gear Stud Nut |
| 6 Top Cover | 32 Gearhead |
| 7 Top Cover Cap Screw | 33 Gearhead Cone |
| 9 Crank Disc Screw | 34 Gearhead Cone Adjusting Ring |
| 10 Guide Side Frame | 35 Adjusting Ring Lock |
| 10A Guide Side Frame complete with
Nos. 124 and 13 | 36 Ring Lock Screw |
| 11 Drive Side Frame | 37 Morse Taper Socket |
| 11B Drive Side Frame complete with
Nos. 124, 13 and 27 | 38 Reamer Chuck |
| 13 Frame Bushing | 41 Case Ball Race |
| 14 Frame Bolt | 42 Bottom Cover |
| 16 Frame Bolt Nuts | 43 Spindle Packing |
| 17 Cylinder | 44 Packing Nut |
| 18 Cylinder Bushing | 45 Case |
| 19 Piston | 46 Hose Nipple |
| 20 Piston Pin | 48 Plain Handle |
| 21 Piston Packing | 63 Oil Hole Plug |
| 22 Piston Packing Spring | 65 Gearhead Spanner |
| 23 Connecting Rod | 66 Bottom Cover Spanner |
| 24 Connecting Rod Bushing | 81 Crank Nut |
| 25 Roller | 90 Square Taper Socket |
| 26 Roller Bushing | 93 Spindle Nut |
| 27 Pinion | 108 Throttle Handle complete |
| 28 Intermediate Gear | 122 Crank Complete |
| | 124 Frame Ball Cup
3/8 inch Balls |

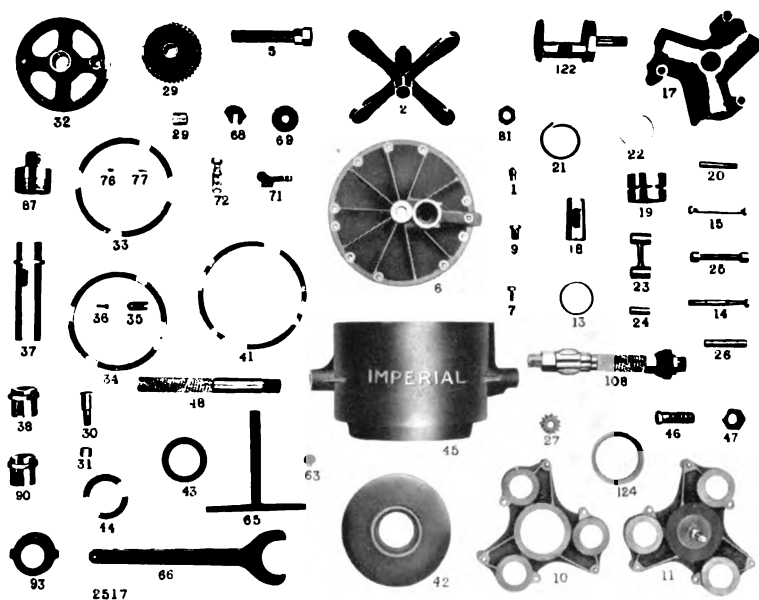
"IMPERIAL" PISTON DRILLS



Duplicate Parts of No. 3 "Imperial" Drill

- | | |
|---|--|
| <p> 1 Feed Nut Center
 2 Feed Nut
 5 Feed Screw
 6 Top Cover
 7 Top Cover Cap Screws
 9 Crank Disc Screw
 10 Guide Side Frame
 10A Guide Side Frame complete with Nos. 124 and 13
 11 Drive Side Frame
 11B Drive Side Frame complete with Nos. 124, 13 and 27
 13 Frame Bushing
 14 Frame Bolt
 15 Frame Separator
 16 Frame Bolt and Separator Nuts
 17 Cylinder
 18 Cylinder Bushing
 19 Piston
 20 Piston Pin
 21 Piston Packing
 22 Piston Packing Spring
 23 Connecting Rod
 24 Connecting Rod Bushing
 25 Roller
 26 Roller Bushing
 27 Pinion
 28 Intermediate Gear
 29 Gear Bushing </p> | <p> 30 Gear Stud
 31 Gear Stud Nut
 32 Gearhead
 33 Gearhead Cone
 34 Gearhead Cone Adjusting Ring
 35 Adjusting Ring Lock
 36 Ring Lock Screw
 37 Morse Taper Socket
 38 Reamer Chuck
 41 Case Ball Race
 42 Bottom Cover
 43 Spindle Packing
 44 Packing Nut
 45 Case
 46 Hose Nipple
 48 Plain Handle
 63 Oil Hole Plug
 65 Gearhead Spanner
 66 Bottom Cover Spanner
 81 Crank Nut
 90 Square Taper Socket
 93 Spindle Nut
 108 Throttle Handle complete
 122 Crank Complete
 124 Frame Ball Cup
 127 Pinion Key (not shown)
 128 Pinion Nut (not shown)
 $\frac{3}{8}$ inch Balls </p> |
|---|--|

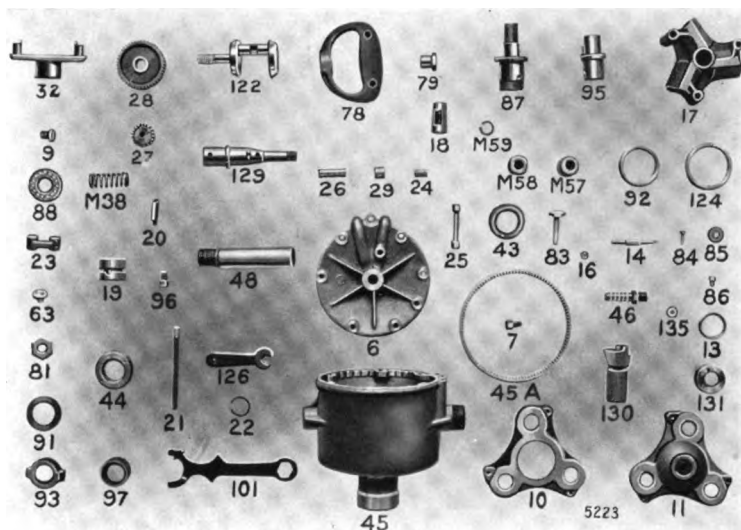
"IMPERIAL" PISTON DRILLS



Duplicate Parts of No. 4 "Imperial" Drill

- | | |
|---|--------------------------------------|
| 1 Feed Nut Center | 32 Gearhead |
| 2 Feed Nut | 33 Gearhead Cone |
| 5 Feed Screw | 34 Gearhead Cone Adjusting Ring |
| 6 Top Cover | 35 Adjusting Ring Lock |
| 7 Top Cover Cap Screw | 36 Ring Lock Screw |
| 9 Crank Disc Screw | 37 Morse Taper Socket |
| 10 Guide Side Frame | 38 Reamer Chuck |
| 10A Guide Side Frame complete with
Nos. 124 and 13 | 41 Case Ball Race |
| 11 Drive Side Frame | 42 Bottom Cover |
| 11B Drive Side Frame complete with
Nos. 124, 13 and 27 | 43 Spindle Packing |
| 13 Frame Bushing | 44 Packing Nut |
| 14 Frame Bolt | 45 Case |
| 15 Frame Separator | 48 Plain Handle |
| 16 Frame Bolt and Separator Nuts | 63 Oil Hole Plug |
| 17 Cylinder | 65 Gearhead Spanner |
| 18 Cylinder Bushing | 66 Bottom Cover Spanner |
| 19 Piston | 68 Reverse Valve |
| 20 Piston Pin | 69 Reverse Valve Cover |
| 21 Piston Packing | 71 Reverse Valve Handle |
| 22 Piston Packing Spring | 72 Reverse Valve Stem |
| 23 Connecting Rod | 73 Reverse Valve Stem Nut |
| 24 Connecting Rod Bushing | 76 Valve Handle Latch Pin |
| 25 Roller | 77 Latch Pin Spring |
| 26 Roller Bushing | 81 Crank Nut |
| 27 Pinion | 87 Spindle |
| 28 Intermediate Gear | 90 Square Taper Socket |
| 29 Gear Bushing | 93 Spindle Nut |
| 30 Gear Stud | 108 Throttle complete |
| 31 Gear Stud Nut | 122 Crank complete |
| | 124 Frame Ball Cup
3/8 inch Balls |

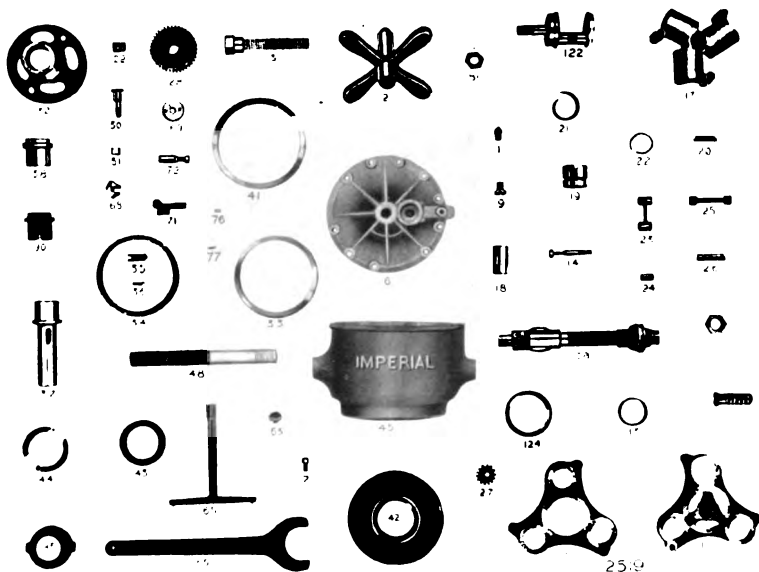
"IMPERIAL" PISTON DRILLS



Duplicate Parts of No. 11 "Imperial" Drill

6	Top Cover	M57	Throttle Handle Base
7	Top Cover Screw	M58	Throttle Handle Cap
9	Crank Disc Screw	M59	Throttle Handle Strainer
10	Guide Frame	63	Oil Hole Plug
11	Drive Frame	78	Grip Handle
13	Frame Bushing	79	Grip Handle Stud
14	Frame Bolt	81	Crank Nut
16	Frame Bolt Nut	83	Pinion Screw
17	Cylinder	84	Gear Stud Screw
18	Cylinder Bushing	85	Gear Stud Washer
19	Piston	86	Gearhead Screw
20	Piston Pin	87	Spindle
21	Piston Packing	88	Spindle Bearing
22	Piston Spring	91	Spindle Packing Seat
23	Connecting Rod	92	Packing Nut Lock
24	Rod Bushing	93	Spindle Nut
25	Roller	95	Bit Chuck
26	Roller Bushing	96	Bit Chuck Set Screw
27	Pinion	97	Case Bushing
28	Intermediate Gear	101	Combination Spanner
29	Gear Bushing	122	Crank
32	Gearhead	124	Frame Ball Cup
M38	Throttle Handle Spring	126	Cap Bolt Wrench
43	Spindle Packing	129	Throttle Handle
44	Packing Nut	130	Throttle Handle Valve
45	Case	131	Throttle Handle Nut
45A	Internal Gear Rack	135	Roller Steam Washer,
46	Hose Nipple		Balls, $\frac{1}{8}$ inch diameter
48	Plain Handle		

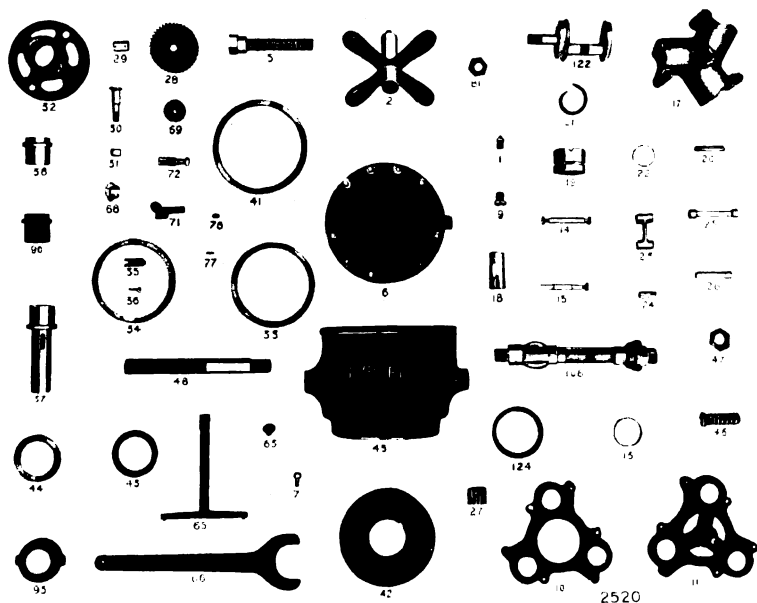
"IMPERIAL" PISTON DRILLS



Duplicate Parts of No. 12 "Imperial" Drill

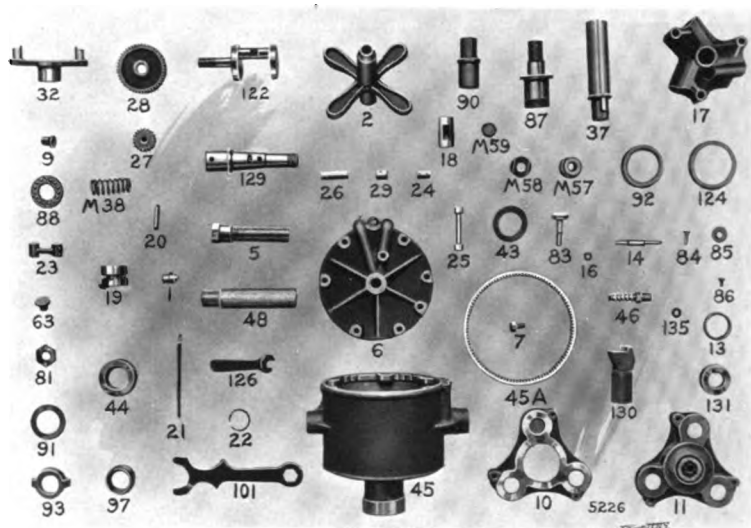
- | | |
|------------------------------------|---------------------------------|
| 1 Feed Nut Center | 32 Gearhead |
| 2 Feed Nut | 33 Gearhead Cone |
| 5 Feed Screw | 34 Gearhead Cone Adjusting Ring |
| 6 Top Cover | 35 Adjusting Ring Lock |
| 7 Top Cover Cap Screws | 36 Ring Lock Screw |
| 9 Crank Disc Screw | 37 Morse Taper Socket |
| 10 Guide Side Frame | 38 Reamer Chuck |
| 10A Guide Side Frame complete with | 41 Case Ball Race |
| Nos. 124 and 13 | 42 Bottom Cover |
| 11 Drive Side Frame | 43 Spindle Packing |
| 11B Drive Side Frame complete with | 44 Packing Nut |
| Nos. 124, 13 and 27 | 45 Case |
| 13 Frame Bushing | 48 Plain Handle |
| 14 Frame Bolt | 63 Oil Hole Plug |
| 16 Frame Bolt Nuts | 65 Gearhead Spanner |
| 17 Cylinder | 66 Bottom Cover Spanner |
| 18 Cylinder Bushing | 68 Reverse Valve |
| 19 Piston | 69 Reverse Valve Cover |
| 20 Piston Pin | 71 Reverse Valve Handle |
| 21 Piston Packing | 72 Reverse Valve Stem |
| 22 Piston Packing Spring | 73 Reverse Valve Stem Nut |
| 23 Connecting Rod | 76 Valve Handle Latch Pin |
| 24 Connecting Rod Bushing | 77 Latch Pin Spring |
| 25 Roller | 81 Crank Nut |
| 26 Roller Bushing | 90 Square Taper Socket |
| 27 Pinion | 93 Spindle Nut |
| 28 Intermediate Gear | 108 Throttle Handle complete |
| 29 Gear Bushing | 122 Crank complete |
| 30 Gear Stud | 124 Frame Ball Cup |
| 31 Gear Stud Nut | $\frac{3}{8}$ inch Balls |

"IMPERIAL" PISTON DRILLS



Duplicate Parts of No. 13 "Imperial" Drill

- | | | | |
|-----|---|-----|------------------------------|
| 1 | Feed Nut Center | 33 | Gearhead Cone |
| 2 | Feed Nut | 34 | Gearhead Cone Adjusting Ring |
| 5 | Feed Screw | 35 | Adjusting Ring Lock |
| 6 | Top Cover | 36 | Ring Lock Screw |
| 7 | Top Cover Cap Screws | 37 | Morse Taper Socket |
| 9 | Crank Disc Screw | 38 | Reamer Chuck |
| 10 | Guide Side Frame | 41 | Case Ball Race |
| 10A | Guide Side Frame complete with
Nos. 124 and 13 | 42 | Bottom Cover |
| 11 | Drive Side Frame | 43 | Spindle Packing |
| 11B | Drive Side Frame complete with
Nos. 124, 13 and 27 | 44 | Packing Nut |
| 13 | Frame Bushing | 45 | Case |
| 14 | Frame Bolt | 48 | Plain Handle |
| 15 | Frame Separator | 63 | Oil Hole Plug |
| 16 | Frame Bolt and Separator Nuts | 65 | Gearhead Spanner |
| 17 | Cylinder | 66 | Bottom Cover Spanner |
| 18 | Cylinder Bushing | 68 | Reverse Valve |
| 19 | Piston | 69 | Reverse Valve Cover |
| 20 | Piston Pin | 71 | Reverse Valve Handle |
| 21 | Piston Packing | 72 | Reverse Valve Stem |
| 22 | Piston Packing Spring | 73 | Reverse Valve Stem Nut |
| 23 | Connecting Rod | 76 | Valve Handle Latch Pin |
| 24 | Connecting Rod Bushing | 77 | Latch Pin Spring |
| 25 | Roller | 81 | Crank Nut |
| 26 | Roller Bushing | 90 | Square Taper Socket |
| 27 | Pinion | 93 | Spindle Nut |
| 28 | Intermediate Gear | 108 | Throttle Handle complete |
| 29 | Gear Bushing | 122 | Crank complete |
| 30 | Gear Stud | 124 | Frame Ball Cup |
| 31 | Gear Stud Nut | 127 | Pinion Key (not shown) |
| 32 | Gearhead | 128 | Pinion Nut (not shown) |
| | | | $\frac{3}{8}$ inch Balls |



Duplicate Parts of No. 21 "Imperial" Drill

1	Feed Nut Center	45A	Internal Gear Rack
2	Feed Nut	46	Hose Nipple
5	Feed Screw	48	Plain Handle
6	Top Cover	M57	Throttle Handle Base
7	Top Cover Screw	M58	Throttle Handle Cap
9	Crank Disc Screw	M59	Throttle Handle Strainer
10	Guide Frame	63	Oil Hole Plug
11	Drive Frame	81	Crank Nut
13	Frame Bushing	83	Pinion Screw
14	Frame Bolt	84	Gear Stud Screw
16	Frame Bolt Nut	85	Gear Stud Washer
17	Cylinder	86	Gear Head Screw
18	Cylinder Bushing	87	Spindle
19	Piston	88	Spindle Bearing
20	Piston Pin	90	Square Taper Socket
21	Piston Packing	91	Spindle Packing Seat
22	Piston Spring	92	Packing Nut Lock
23	Connecting Rod	93	Spindle Nut
24	Rod Bushing	97	Case Bushing
25	Roller	101	Combination Spanner
26	Roller Bushing	122	Crank
27	Pinion	124	Frame Ball Cup
28	Intermediate Gear	126	Cap Bolt Wrench
29	Gear Bushing	*129	Throttle Handle
32	Gearhead	*130	Throttle Handle Valve
37	Morse Taper Socket	131	Throttle Handle Nut
M38	Throttle Handle Spring	135	Roller Stem Washer,
43	Spindle Packing		Balls, $\frac{1}{8}$ inch diameter
44	Packing Nut		
45	Case		

* Photo apparently shows these reversed.

CARE OF THE DRILLS

Careful and systematic attention to the cleaning and lubricating of these tools will show large returns for such care. The motors of pneumatic drilling machines run at a very high rate of speed, and proper lubrication is absolutely essential to keep them in good working order. These machines are necessarily of a very high grade of workmanship to insure efficiency, and the working parts must be kept by lubrication from cutting or undue wear, or the power of the machine will be seriously lessened.

Kerosene is best to use for cleaning the machine, and if the machine has not been used for several days a liberal supply of kerosene should be poured in the end of the handle, as well as in the oil cocks or plug openings and the machine run for a few minutes and then oiled with a light-body lubricating oil. Sewing machine oil is good to use, as well as any of the special pneumatic tool oils on the market. We especially recommend our pneumatic tool oil "Sprayoleum." Heavy oil should never be used, as the compressed air for operating the tool lowers the temperature and causes heavy oil to become gummy, which interferes with the speed and power of the motor.

Drills when new and first started should be oiled at least once each hour for the first two or three days, and every two hours thereafter when in operation.

The recommended air pressure for these drills is from 80 to 100 pounds. This means pressure at the tool, not gauge pressure at the receiver.

When taking a lead of as much as fifty feet from the pipe line it is best to use a $\frac{3}{4}$ -inch hose, reducing it to $\frac{1}{2}$ -inch about ten feet from the tool. The object of using the $\frac{3}{4}$ -inch hose is to get the air up to the tool at full pressure, and the ten-foot length of $\frac{1}{2}$ -inch hose is for flexibility, making it easier for the operator to handle the tool. Where the leads are not more than twenty-five feet, $\frac{1}{2}$ -inch hose is satisfactory.

"IMPERIAL" PISTON DRILLS



"Imperial" Wood Boring Drill